



SECTION 7

CONFINED SPACE ENTRY



1. **CONFINED SPACE ENTRY POLICY:** The Maul Electric, Inc Policy and procedures for confined space entry are mandated for use on all Maul Electric, Inc work sites. If a client-approved policy exists, that meets or exceeds the Maul Electric, Inc Policy; the client's policy shall be followed. A copy of this policy shall be maintained at the work site.
 - A. **OSHA References:** OSHA 29 CFR 1910.146, OSHA 29 CFR 1926.21, OSHA 29 CFR 1926.352, OSHA 29 CFR 1926.353, OSHA 29 CFR 1926.651, OSHA 29 CFR 1926.956
 - B. **Definition of Confined Spaces:** A Confined Space is a space that is large enough and so configured that an employee can bodily enter and perform assigned work and has limited or restricted means for entry or exit (i.e., tanks, vessels, silos, storage bins, hoppers, vaults, and pits that are spaces that may have limited means of entry) and is not designed for continuous employee occupancy.
 - C. **Definition of Entry into Confined Space:** Entry means the action by which a person passes through an opening into a confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon **as any part of the entrant's body breaks the plane of an opening into the space.**
 - D. **Definition of Permit-Required Confined Space:** A permit-required confined space means a confined space that has one or more of the following characteristics:
 1. It contains or has a potential to contain a hazardous atmosphere.
 2. It contains a material that has the potential for engulfing an entrant.
 3. It has the internal configuration that could trap an entrant or asphyxiate an entrant by inwardly converging walls or by a floor, which slopes downward and tapers to a small cross section.
 4. It contains any other recognized serious safety and health problems.
 - E. **Definition of Permit-Required Confined Space Program:** A permit-required confined space program is the employer's overall program for controlling and protecting employees from permit-required confined space hazards and regulating employee entry into permit-required confined spaces



- F. Definition of Non-Permit Confined Spaces:** A non-permit required confined space is a confined space that does not contain, or with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm
- G. Designation:** It is the policy of Maul Electric, Inc that specific employees will be designated as Entry Supervisor, Attendant, and Confined Space Entrant. Furthermore, employees who have not been trained, qualified and designated will not perform duties associated with the previous listed titles.
- H. Training:** Training will be provided in the hazards of confined space entry, the confined space entry policy, and the procedures for permit-required and non-permit required confined space on an as needed basis or annually, whichever comes first. Entry Supervisors, responsible for hazardous atmospheric testing will be trained and qualified in the use of gas detection equipment and the interpretation of the data. Certificates for all entrants, attendants, and supervisors involved in confined space operations shall be at each project site where confined space entries are taking place or readily available.
- Each affected employee must be trained prior to initial assignment, prior to a change in assigned duties, if a new hazard has been created or special deviations have occurred.
- Maul Electric, Inc must certify that the required training has been accomplished. The certification shall include employee name, trainer signature/initials, dates of training. Certification must be made available to employees & their authorized representative
- I. Violations:** Violations of the Confined Space Entry Policy and the Permit-Required and Non-Permit Required Confined Space Entry procedures will not be tolerated.



2. PERMIT-REQUIRED CONFINED SPACE ENTRY PROCEDURE

A. **OSHA Reference:** 29 CFR 1910.146, 29 CFR 1926.21(b)(6)(i) thru (ii)

B. **General:** If the client or Maul Electric, Inc has determined a confined space to be a permit-required confined space, the following procedure will apply. If the client procedures meet or exceed this procedure, the client procedure will be used. All permits will be retained for a one-year period and evaluated by the Safety Director to review and improve on future confined space entry policies and procedures. Review process to include and not limited to the following:

- 1) Any and all unauthorized entry of a confined space
- 2) A hazard not covered by the permit
- 3) Occurrence of an injury or near miss
- 4) Employee complaints.

C. **Qualifications:**

1. **Entry Supervisor:** Maul Electric, Inc employees assigned to entry supervisor duties must be trained and qualified in Maul Electric, Inc and Client confined space procedures. Unless specifically designated by Maul Electric, Inc no Employee will assume the duties of Entry Supervisor. Certification of training in hazardous atmosphere testing equipment must be obtained
2. **Attendant (Safety Observer):** The attendant (safety observer) must be trained, qualified and designated by to perform the duties of an entry attendant. Note: One attendant is typically required for each specific Confined space; attendants are not authorized to attend multiple confined space entries unless specific provisions are made prior to entry.
3. **Authorized Entrants:** Entrants into confined space must be trained, qualified and authorized by Maul Electric, Inc

D. **Duties of Entry Supervisor:**

1. The Entry Supervisor must know the hazards faced during entry, including information on the mode, signs, and symptoms and consequences of exposure. An MSDS or Similar written material must be kept at the work site for any material to which the authorized entrant may be exposed.
2. The Entry Supervisor must verify that the appropriate entries have been made on the confined space entry permit and that all specified tests have been conducted.



3. Verifies, by checking, that all procedures and equipment specified by the permit are in place, before signing the permit and allowing entry.
4. Terminates the entry and cancels the permit if the confined space hazard or conditions outside the confined space pose a hazard to the entrants.
5. Verifies that rescue services are available and that the communication with rescue services is readily available.
6. Removes unauthorized individuals who enter or who attempt to enter the confined space.
7. Reviews the confined space operation at intervals dictated by the hazard and the operation to insure compliance with this policy.
8. Determines when responsibility for a permit space entry operation is transferred.
9. Reviews the Permit-Required Confined Space work, prior to commencement with the attendant, entrants and the client-designated representative.
10. Designates qualified individuals to act as entrants and attendants.
11. Monitor the space and inform the entrants of the potential hazards and results; they must participate in the permit review and signing. Ventilation must be used & testing must be conducted before entry & during work.

E. Duties Of Attendant:

1. The attendant must know the hazards that may be faced during entry, including information on the mode, signs, symptoms, and consequences of exposure. (See a. 1. Above)
2. The attendant must be aware of possible behavioral effects of hazard exposure in authorized entrants.
3. The attendant must maintain an accurate count of authorized entrants in the permit space and ensure that the entrants are properly identified and authorized on the permit.
4. The attendant must insure, by head count, that all authorized entrants have departed the confined space prior to closing out the permit or departing the confined space.
5. The attendant will contact emergency responders utilizing 9-1-1 if the attendant feels the entrants may need assistance to escape from hazards or may have displayed the effects of the hazards of the confined space.
6. The attendant will prevent unauthorized entry to the confined space.
7. The attendant will not attempt to rescue by entry into the confined space. Non-entry rescue attempt only is allowed.



8. The attendant will not vacate the area, for any reason, or perform any duty, which would prevent or inhibit the ability to communicate with the entrants.
9. The attendant will evacuate the confined space if:
 - a) The attendants detects a condition outside (i.e. an alarm, leak, etc.) which may endanger the entrants or any alarm condition on continuous monitoring equipment
 - b) The attendant detects a behavioral or symptomatic change in the entrant(s).
 - c) The attendant must leave the site or cannot comply with all the duties listed in this section.
 - d) The attendant cannot effectively communicate with the entrants.
 - e) The attendant is advised to vacate the confined space by a client representative or Maul Electric, Inc Supervisor.
 - f) The attendant determines that the entrant (s) is (are) not complying with personal protective equipment practices or safe work practices.

F. Duties of the Authorized Entrant:

1. The authorized entrant must know the hazards that may be faced during entry, including information on the mode, signs and symptoms and consequences of the exposure. (See A-1)
2. Properly use protective equipment and monitoring devices as specified.
3. Establish and maintain open communications with the attendant.
4. Alert the attendant if the entrant detects a prohibited or hazardous condition.
5. Alert the attendant and other entrants if the entrant notices any warning sign or change in behavior or symptom of exposure in any other entrant. The entrant will notify the entry supervisor of the condition changes. The supervisor will then cancel the existing permit and re-evaluate the space.
6. The entrant will immediately take action to evacuate the confined space if the entrant:
 - a) Is directed to do so by the attendant, entry supervisor or designated client representative.
 - b) Detects a failure to comply with personal protective equipment requirements.
 - c) Is unable to maintain effective communication with the attendant.
 - d) Detects any condition noted in items (B.4 and 5).



e) Detects any alarm on continuous monitoring equipment.

- G. Duties of the “Host” Employer or Client:** The host employer will provide qualified rescue service personal as prescribed by OSHA 29 CFR 1910.146 (k). **This must be pre-discussed with Maul Electric, Inc designated representative and procedures to contact rescue organizations must clearly be established. The host employer will be responsible for the issuance of confined space entry permits and providing Material Safety Data Sheets for hazardous materials previously stored or present in the confined space.**

IMPORTANT NOTE: IF THE PERMIT REQUIRED CONFINED SPACE IS EVACUATED FOR ANY REASON, MAUL ELECTRIC, INC EMPLOYEES WILL NOT RE-ENTER THE CONFINED SPACE WITHOUT DETERMINATION OF THE CAUSE AND ELIMINATION OF THE HAZARD TO THE SATISFACTION OF THE AUTHORIZED ENTRY SUPERVISOR, ATTENDANT, ENTRANTS AND CLIENT REPRESENTATIVE. RETURN TO FULL COMPLIANCE WITH THIS PROCEDURE OR CLIENT ESTABLISHED PROCEDURE IS REQUIRED BEFORE ENTRY CAN RESUME. ALL EMPLOYEES OR THEIR REPRESENTATIVES ARE ENTITLED TO REQUEST ADDITIONAL MONITORING AT ANY TIME THEY DEEM NECESSARY OR APPROPRIATE.

- H. Personal Protective Equipment:** The following personal protective equipment must be used for entry into permit-required confined space, unless it can be clearly established that the retrieval equipment will increase the overall risk of entry or would not contribute to the rescue of the entrant.
1. Each authorized entrant shall use a chest or full body harness with a retrieval line attached at the center of the entrant’s back near shoulder level or above the entrant’s head.
 2. Wristlets may be used in lieu of the chest or full body harness if the employer can establish that the full body harness or chest harness is not feasible or creates a greater hazard and that the wristlets are the safest and most effective means of retrieval.
 3. The retrieval line must be attached to a mechanical device or fixed point outside of the confined space in a manner that would allow immediate non-entry rescue by the attendant or rescue response.
 4. A mechanical retrieval device must be available to retrieve entrants from a vertical confined space more than 5 feet deep.



I. Rescue Services And Retrieval Equipment:

1. **Rescue Services:** The host employer shall identify qualified rescue services as their main means of rescue to be utilized in the event of an emergency. The name and method of contacting rescue services shall be clearly identified on the confined space permit. Response time for rescue arrival on site should be identified prior to start of work. The rescue services shall have the opportunity to examine the entry site and be trained in performing confined space rescue and shall have practiced a rescue situation within the last 12 months. The rescue service will have the opportunity to decline service. Rescue services are required to be on site in cases of IDLH entries.

Employees will not attempt a rescue by entering the confined space unless specifically trained, designated and authorized in writing by the company president and the host employers designated entry supervisor.

2. **Retrieval Equipment:** To facilitate non-entry rescue, retrieval systems or other methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. The retrieval system should be in place prior to entry and shall meet the following requirements:
3. Each authorized entrant shall use a chest or full body harness with a retrieval line attached at the center of the entrant's back near shoulder level, or above the entrant's head.
4. The other end of the retrieval line shall be attached to a mechanical device or a fixed point outside the permit space in a manner that would allow immediate non-entry rescue to begin as soon as the rescuer becomes aware that a rescue is necessary. A mechanical device must be available to retrieve personnel from vertical type permit space more than 5 feet deep.

- J. **Hazardous Material Exposure:** Since exposure to hazardous materials inside a confined space is possible, a copy of the Material Safety Data Sheet for materials contained, previously contained, or used within the confined space. They shall be posted with a copy of the confined space permit and be available for rescue personnel immediately outside the access point to the confined space.



3. PERMIT REQUIRED CONFINED SPACE PREPARATION FOR ENTRY:

- A. Isolation:** The confined space must be removed from service and completely protected against the release of energy and material into the space.
- B.** All energy sources must be locked out.
- C.** All lines, pipes, hoses, intake vents, ducts, etc., leading to or from the confined space must be broken away in a manner which would prevent intake or through put of hazardous materials or energy: blanked, blinded, or sections removed.
- D.** Rotating equipment must be de-energized and locked out.
- E.** The confined space must be purged, flushed, ventilated, cleaned or inert to eliminate or control the hazardous atmosphere **(Note: Inert Atmospheres create a hazard by displacing oxygen with an inert. Special care and ventilation prior to testing and entry must be exercised prior to entry. An MSDS must also be provided and kept at the site for chemical-cleaning agents used in confined spaces. Confined spaces purged with steam or cleaned with hot water must be allowed time to cool to acceptable levels prior to the onset of entry).**
- F.** Barriers to prevent pedestrian or vehicle entry, which could pose a hazard to entrants, must be erected.
- G.** Determine if the cover (if any) can be safely removed by the following:
 - 1. Conduct exterior visual examination for existence of hazards, i.e. liquid, etc.
 - 2. Test the atmosphere around the cover to determine the presence of hydrocarbons or toxic vapors.
 - 3. Slowly open the cover to insure no existence of pressure, fluids, etc. If possible, atmospheric testing should be conducted.
 - 4. Remove cover and visually inspect from the outside for the presence of hazards.
 - 5. Conduct atmospheric testing in this exact manner **(NOTE: Ventilation systems must be off for a minimum of 30 minutes prior to testing):**
 - a) Test atmosphere outside of confined space for oxygen content.



- b) Test atmosphere inside of confined space for oxygen content.
 - c) Compare reading, a difference of -1% oxygen content inside of the confined space may represent 10,000 PPM or a toxic material.
 - d) Oxygen content must be above 19.5% and below 23.5% for entry.
 - e) Test for combustible gases must be below 2% LFL for entry.
 - f) Test for toxic gases or vapors must read 0 Parts Per Million (PPM).
 - g) If testing falls outside of the parameters established above, a permit cannot be issued without elimination of hazard and retest.
 - h) Entrants or their representatives are to be given an opportunity to review and participate in the review and calibration of air monitoring data before entering.
 - i) Entrants must also be given the opportunity to participate in the permit review and signing.
- H.** Designate attendant and entrants as described in this procedure.
- I.** Provide all personal protective equipment.
- J.** Provide ventilation, (Refer to Section on Welding and Burning).
- K.** All lighting and electrical tools used in confined spaces must be connected to GFCI or reduced to 12 volts
- L.** All air-operated tools must be connected to breathing air quality air sources.
- M.** Discuss job requirements, emergency procedures and hazards with entrants, attendants and client-designated representatives. Secure / issue proper confined space entry permit and appropriate work permit for confined space work (if required by client). Note: In spaces where multi employers are working in the same space, all of the above information will be discussed with those individuals entering the space and information gathered/discussed as to there purpose of entering the space. If for any reason it would increase the hazards to employees entering the space an effort to schedule different entry periods will be made.
- N.** Post copies of the permits; permit required confined space entry procedure, MSDS and emergency procedures plan at the work site.



- O.** A permit required confined space may be declared and certified as a non-permit required confined space by following the procedures outlined in the Non-Permit Required Confined Space Procedure.
- P.** Periodic hazardous atmosphere monitoring will be conducted and logged on the confined space entry permit form.
- Q.** If the confined space is vacated, unattended, or recovered, visual inspection and re-testing of the space for hazardous atmosphere must be conducted.
- R. Caution:**

 - 1. Hazards, such as welding fumes, electrical shock, flammable and toxic vapors, may be introduced to the confined space by work in the confined space.
 - 2. Welding and cutting torches may not be left on and unattended. The source must be isolated prior to departing the confined space.
 - 3. Adequate ventilation must be provided for welding, cutting, and burning work inside of confined spaces.
 - 4. Employees or their representatives are entitled to request additional monitoring at any time.



4. NON PERMIT REQUIRED CONFINED SPACE ENTRY PROCEDURE

- A. Determination of Permit-Required or Non-Permit Required Confined Space:** In most cases, our clients have previously determined permit-required and non-permit required confined spaces. For permit-required confined spaces, the employer must inform all exposed employees by posting signs or by any other effective means, of the existence and location of the danger posted by the permit-required space.

Maul Electric, Inc employees must consider all confined spaces meeting the definition of a confined space as a permit-required confined space, until a determination has been made by a trained, competent entry supervisor (i.e., client designated individual, Maul Electric, Inc Foreman or Site Supervisor).

Maul Electric, Inc employees shall not enter the confined space until a determination has been made. Certification of non-permit required confined space determination will be provided to the Maul Electric, Inc, employees assigned to enter and must be kept at the job site. Under no circumstances shall Maul Electric, Inc, employees enter a Permit-Required Confined Space without a properly issued permit for entry and work will not begin in the permit-required confined space until additional appropriate permits, i.e. hot work, have been issued.

- B.** The following steps must be taken and the attached form be completed in determining the status of the confined space by the Maul Electric, Inc Entry Supervisor.
1. Entry covers must be SAFELY removed.
 2. A visual inspection, if possible, without entry must be performed to establish the absence of recognized hazards.
 3. Install proper railing or temporary barrier that will prevent accidental fall through the opening.
 4. Test internal atmosphere with a calibrated direct reading instrument for the following conditions ***AIR MOVERS MUST BE TURNED OFF DURING ATMOSPHERIC TESTING AND THE TESTING MUST BE ACCOMPLISHED IN THE EXACT ORDER PRESENTED BELOW.***
 - a) Oxygen content – must be above 19.5% and below 23.5%.
 - b) Test for flammable gases and vapors – must be below 10% flammable limit (LFL).
 - c) Visually ascertain that no airborne combustible dust is present.
 - d) Test for the presence of H₂S or other toxic contaminants.



- e) **IF YOU ARE IN DOUBT OF RESULTS, CONTACT MAUL ELECTRIC, INC SAFETY DIRECTOR IMMEDIATELY FOR FURTHER INSTRUCTIONS**
- C. The Maul Electric, Inc Entry Supervisor must complete the attached form and leave the form at the work site. In the event that multiple sites are involved, each site must be tested and the results posted on the attached forms.
- D. Ladders must be provided for egress and entry.
- E. A safety observer (attendant) must be assigned with clear communications capability with the non-permit confined space entrants. **THE ATTENDANT SHALL NOT ATTEMPT TO RESCUE ENTRANTS WITHIN THE CONFINED SPACE BY ENTERING INTO THE CONFINED SPACE.**
- F. The attendant must be knowledgeable of how to summon emergency response personnel.
- G. Non-Permit Required Confined Spaces that are vacated for a period of 1 hour, recovered for any purpose, or suspected to have any change in atmosphere or condition, must be re-tested and the results annotated on the attached form.
- H. Non-Permit Required Confined Spaces must be periodically monitored for changes in conditions by the Entry Supervisor, the results annotated on the attached form.
- I. Failure of any re-test or changes in condition requires reclassification of the confined space as a Permit-Required Confined Space and must be noted on the attached form.
- J. Maul Electric, Inc employees, subcontractors, etc., will be immediately removed from the confined space and the Permit-Required Confined Space. Procedures must be followed.
- K. The use of ventilation must always be considered.